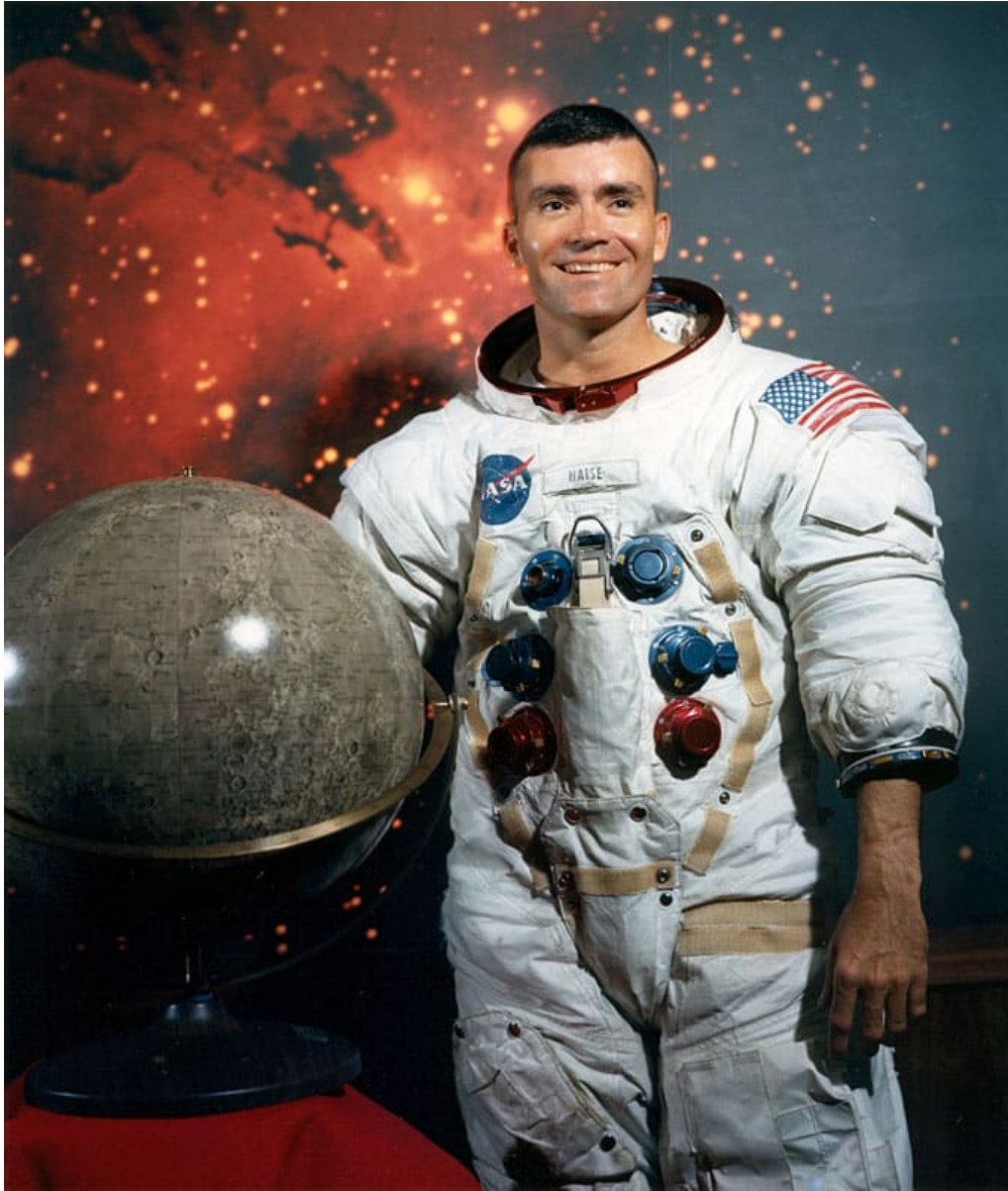


Astronaut Recalls the Peril of Apollo 13 and Joys of a Test Pilot's Life

April 14, 2022 by Dan McCue



Astronaut Fred Haise in his official mission portrait. (NASA photo)

WASHINGTON — By April 1970, Americans had grown pretty difficult to shock.

The assassinations that bracketed the past decade had seen to that, as had an intractable war and the seeming unraveling of society that saw generations at each other's throats and nearly every summer — once the province of vacationing families piled into overstuffed station wagons — grow longer, hotter and angrier than the one before.

About the only thing that brought people together was the Apollo space program, which in July 1969 fulfilled President John F. Kennedy's goal of "landing a man on the moon and returning him safely to the Earth."

But by the time the crew of Apollo 13 was preparing for its launch just eight months later, Americans were beginning to lose interest. We'd been to the moon twice and there were pressing things to attend to back home.

The big news the week of Apollo 13's launch was that The Beatles had officially called it quits. No one would have guessed that just two days later the world — the entire world — would be gripped by an ordeal that only science fiction writers had previously dared to imagine: A crew of American astronauts faced the very real prospect of being lost in space.

Fred Haise, now 88, was one of those astronauts and he recently published a memoir entitled "Never Panic Early: An Apollo 13 Astronaut's Journey." He was also the star of a virtual **event** Wednesday night hosted by the Smithsonian's National Air and Space Museum.

The event began with Haise in conversation with Dr. Teasel Muir-Harmony, curator of the museum's Apollo spacecraft collection, commemorating the 52nd anniversary of the Apollo 13 crisis in space.



The Apollo 13 crew on the day before launch. (from left to right) Fred Haise, Jack Swigert and James Lovell. (NASA photo)

Afterwards, Smithsonian magazine journalist Chris Klimek moderated a Q&A session, during which attendees were able to pose their own questions to the retired astronaut.

“It’s kind of almost become a folk tale,” Haise told The Well News last week from his home in Houston, Texas.

“I’ll talk, obviously, about what’s in the book, which covers my entire working life from test pilot to astronaut to aerospace executive, but to this day, what most people are interested in when I do public forums is Apollo 13 and what happened over the course of those five days.

“I mean, young children have no recollection of what happened and are more interested in the human aspects of space flight, like ‘How do live in a closed space?’ and ‘What did you eat?’ And ‘How do you go to the bathroom in space?’

“And adults, with all the interest in personal computers and cellphones, will ask about the capabilities of the systems we used back then and the computing power. But eventually the questions always come back to impressions: ‘What was it like when this happened?’ And ‘Were you ever afraid you wouldn’t make it back?’

“And everybody remembers the line, ‘Houston, we have a problem.’”

Aspiring Journalist

Born in Biloxi, Mississippi, on Nov. 14, 1933, Haise got hooked on journalism while attending Biloxi High School and worked summers at his local newspaper during both high school and his first two years of college.

“I was certain I was going to go into the newspaper business when I graduated. I majored in journalism and was the editor of the college paper, the Bulldog Barks, my second year at what was then Perkinson Junior College,” Haise remembered.

“So I was intent on being a journalist when the Korean War started and I wanted to serve,” he said.

Haise’s father, Fred Wallace Haise, Sr., supported his son’s decision but recommended he serve his country as a military officer.

“As it happened, the only program that fit with my dad’s recommendation, my age and my having completed two years of college was a program called the Naval Aviation Cadet Program,” Haise said. “I had never flown before. In fact, I had never been in an airplane before. But as soon as I got into the air I just loved it.

“I mean, we probably flew no higher than 5,000 feet, but I can still remember how it felt to see the ground from that vantage point. ... To look down and see the roads and railroad tracks and houses. It was just magic to me.

“And I think I said right then and there, ‘I don’t know how, but somehow this is going to be my lifetime career. I’m going to do something in aviation.’ Of course, there was no space program at the time, but eventually, what I felt in that moment was what led me into the higher and faster part of it, in space.”



Fred Haise in a NASA T-38 aircraft. (NASA photo)

As it happened, the Korean War ended before Haise completed his Naval flight training in 1954, but he went on to serve as a U.S. Marine Corps fighter pilot based at the Marine Corps Air Station at Cherry Point, North Carolina.

From there he went on to serve as a tactics and all-weather flight instructor at Navy’s Advanced Training Command at Kingsville,

Texas.

But Haise still wanted more and realized in time that what he really wanted to be was a test pilot.

“At the same time, I also realized it was going to take more than my two years in journalism to realize that goal, so I got out of the active service and earned a Bachelor of Science degree with honor in aeronautical engineering from the University of Oklahoma, while also serving in the Oklahoma Air National Guard.

“That kind of set my resume straight to work in that field,” he said.

It was one of Haise’s superiors in the Air National Guard that recommended he apply to be a test pilot with the National Advisory Committee for Aeronautics, the precursor to the National Aeronautic and Space Administration.

“He said if you get picked to fill an opening at NACA, you’ll get a lot more experience in various types of test programs and with a number of different aircraft, and with any luck, you’ll get assigned to a single project, working for years on a new aircraft in development.”

At the time, the only facility with an opening was the Lewis Research Center in Cleveland, Ohio, today known as the John Glenn Research Center.

Haise worked and flew at the center until his National Guard unit was called up during the Berlin Crisis of 1961 and he eventually served 10 months as a fighter pilot with the U.S. Air Force.

By the time he was stateside again, the U.S. manned spaceflight program was well underway and NACA had been transformed into NASA.

Haise naturally became a research pilot for NASA, and soon found himself at Edwards Air Force Base in California, and in the company of one of the greatest American pilots of all time, the flying ace and Brigadier General Chuck Yeager.

“He was the commandant at the time of the USAF Aerospace Research Pilot School, which trained and produced test pilots for the Air Force and had begun to train future astronauts for NASA, and I got to know Chuck there.

“Not casually,” Haise hastened to add. “I didn’t work with him day to day. But I did get to know him and actually got to fly [with] him once when he was fixing to do a brief checkout of a lightweight aircraft we were testing for NASA at the time.



Edwards Air Force Base with new control tower in foreground and original tower in background. (U.S. Air Force photo)

“So that was my opportunity to show off for him a little bit,” he laughed.

Those familiar with Tom Wolfe’s book “The Right Stuff” or the 1983 movie based on it, will remember Edwards Air Force Base was considered test pilot heaven because it was located on a dry lake bed with nothing around it for miles but desert.

“It was primarily used to test new Air Force aircraft at that time, but NASA had their Flight Research Center there, which is now named after Neil Armstrong, and there were a lot of joint programs, like the X-15 program,” Haise said.

“And it really was in the middle of the desert, which offered a great climate for testing aircraft. The only drawback was, if you really wanted precise data, you had to fly early in the morning before the wind kicked up and it got more turbulent.

“So a lot of flights went up shortly after dawn. ... And there was a lot of empty space around, so obviously we didn’t pose any hazard to nearby communities or anything like that,” Haise said.

“I have to say, of all the things I’ve done, I really wanted to go to Edwards because it was kind of the Mecca at the time for flight testing advanced aircraft,” Haise said.

In fact, Haise was actually following in the footsteps of another test pilot who had started his march up the test pilot career ladder in Cleveland, Ohio, and then made the jump to Edwards: Neil Armstrong.

“I was about three years behind Neil on the trail, and by the time I arrived, he had already made a name for himself flying the X-15,” Haise said.

The X-15 was a hypersonic, rocket-powered aircraft jointly operated by the Air Force and NASA, and its pilots routinely set new speed and altitude records throughout the 1960s.

Its top speed, 4,520 miles per hour, was achieved in October 1967 and it could fly to altitudes exceeding 50 miles, thus qualifying the military pilots who flew them astronaut wings immediately on their return to Earth.

Haise badly wanted to fly the X-15, but the list of eligible pilots was organized strictly by seniority and he was at the end of the line.

“In fact, that’s kind of why I joined the astronaut program,” he said.



North American X-15A (with test pilots, Edwards AFB, California in the early 1960s. (US Air Force Photo)

Having concluded the X-15 program before he worked his way up to the top of the list, Haise again found himself casting about for what to do next.

Then Neil Armstrong, who had joined the NASA Astronaut Corps in 1962, paid a return visit to Edwards as he prepared for his first spaceflight aboard the Gemini 8, which was scheduled to launch in March 1966.

“I remember Neil stopping by the office and we started talking. It was Neil, myself and Don Mallick, another pilot, and I asked him, ‘So what’s it like being an astronaut?’

“His answer was, ‘Well, you sit in a lot of meetings and you sit in a simulator a lot.’ And he said there’s not much good flying. And he was right, because once you were in the Astronaut Corps you flew these T-38 jets, and while you could occasionally do some acrobatics or something, mostly you flew them to travel between NASA facilities.

“So here I was, thinking about my future and also, at the time, I was involved, directly or indirectly, in three different test programs, flying several different kinds of aircraft. So I really had to think hard about whether I was willing to give up all that flying and join the program as Neil described it.

“Finally, I said, ‘Well, if I sit here, I’m still never going to get the chance to fly the X-15, and you know, going to the moon sounds like a pretty good adventure,’” Haise said.

Fly Me to The Moon

In April 1966, Haise was one of 19 new astronauts selected for the NASA Astronaut program, and he was the first in his group to be assigned a mission, being named backup Lunar Module pilot for both Apollo 8 and Apollo 11.

The danger of the undertaking soon became all too real months later, when the crew of Apollo 1 was killed in a cabin fire during a

launch rehearsal at the Kennedy Space Center's Launch Complex 34.



On Jan. 27, 1967, NASA astronauts Gus Grissom, Ed White and Roger Chaffee lost their lives during a pad fire while training for Apollo 1.
(NASA photo)

NASA had never lost an astronaut before, let alone one in a spacecraft that was unfueled and on the ground.

It was later determined that Gus Grissom, Ed White and Roger Chaffee were killed when a spark jumped from an electrical wire, starting a fire that swept quickly through a capsule filled with combustible nylon material and pure oxygen.

It was also later determined that the crew's rescue was impossible due to a poorly designed door hatch, which could not be opened against the internal pressure of the cabin.

Though Haise acknowledges the grief surrounding the tragedy in "Never Panic Early," he doesn't dwell on it, instead recounting the massive reengineering job that had to be done in the tragedy's aftermath.

He was the same way in conversation.

“At the time of the accident, I happened to be up in New York, at the Grumman facility, testing lunar modules, when [astronaut] Jim McDivitt called and told me what happened.

Later, I attended Ed’s funeral at West Point rather than the one at Arlington for Gus and Roger, because my daughter, Mary Margaret, was close friends in school with Ed’s daughter, Bonnie,” he said.

“It was a big job because of the impact to the design,” he said.

“Obviously more changes were made to the design of the command module, including a new hatch design, but the fire also completely changed the wiring requirements for the lunar module.



The interior of the Apollo 1 command module after the launch pad fire.

(NASA fire)

“Fortunately, a number of modules were already in production and the third module hadn’t had its wiring done yet, so we cast the first

two aside for lengthier retrofitting, and jumped to what we called LEM three, so we could make up the schedule and make the first landmark flight,” he said.

The tragedy also jumbled the flight schedule and astronaut assignments. Every flight had a main crew and a backup crew and each member was assigned a specific role. Haise was supposed to be the backup lunar module pilot on Apollo 8 — which is why he was at the Grumman facility when he got the call about the fire — but by the time the schedule and assignments were recast, Haise found he was the backup command module pilot.

“And I had never even been in the command module,” he said. “So it was back to simulator training for me.”

Things got somewhat back to normal for Haise in his backup role for Apollo 11, for which he was the backup to lunar module pilot Buzz Aldrin, but then life or karma or whatever you want to call it, played what would turn out to be a fateful hand.

“Basically, the way they planned it was for each crew to go through two training cycles as backups and then you’d be the main crew the third time around,” Haise said. “So based on the original cycles, Jim Lovell, Ken Mattingly and I were slated to fly Apollo 14.

“However, because Alan Shepard and Stuart Roosa, who were two of the three astronauts slated to be on Apollo 13, had never gone through any backup cycles because of everything that happened, NASA decided they needed more time, and our missions were switched.”

The new crew of Apollo 13 named their Command Module and Service Module Odyssey, and their Lunar Module, Aquarius.

Apollo 13

If Apollo 11 had rightly transfixed the world, and Apollo 12 had been a worthy follow up, Apollo 13 was slated to be the most ambitious moon landing to date. The landing sight for the lunar module was near the Fra Mauro crater, which was believed to have been formed early in the moon's history.

If true, the rock and soil samples gathered there would provide clues not only about the moon's early development, but the Earth's as well.

Aside from its scientific significance, the hilly site would also make for a much trickier landing than those for previous missions.



Fred Haise during a training exercise in January 1970. (NASA photo)

Jim Lovell, chosen to be mission commander, was one of NASA's most experienced astronauts having, at that point, spent more time in space than any other human being. Fred Haise, the lunar module pilot, was about to make his first spaceflight, as was Jack Swigert,

the command module pilot who was a late replacement for Ken Mattingly, who was grounded after exposure to rubella.

On the morning of April 11, 1970, the crew was driven to the launch pad and then took the long elevator ride up — some 337 feet — to the command module. Beneath them was a rocket powered by 5.5 billion pounds of highly explosive hydrogen fuel.

Despite the inherent drama of such a circumstance, the last-minute preparations for launch were fairly routine for the astronauts. After all, Haise said, they'd practiced in simulators and the command and lunar modules themselves for days and weeks on end.

"Both vehicles are relatively small, the lunar module being the smaller of the two, in terms of cubic feet of space, but you know, we were all fighter pilots and fighters don't have a lot of room in them either," Haise said, describing how it felt to climb into the capsule.

"So only having a small space to operate in was not totally unusual," he said. "But what was unusual was how herky jerky the rocket was at launch."

Haise explained that the first stage of the Saturn V rocket has four separate engines that were designed to move in order to steer the space vehicle in those first critical moments of flight.

"Even a slight adjustment of the engines required a lot of force to be applied laterally, particularly left to right, and the result was feeling a lot more of a jerky motion than I'd ever experienced in an airplane."

Apollo 13 raced into the sky at 2:13 p.m. on a cloudless afternoon at Cape Canaveral, Florida, but the jerkiness of motion was only one thing the crew had to contend with.

Seconds into the launch, after the first stage had been jettisoned, an engine in the second stage shut down prematurely. For anxious seconds, it looked like the crew of Apollo 13 might be splashing down early.

Finally, mission controllers concluded the malfunction wasn't mission-ending; they radioed to the crew that Apollo 13 was good to go for the moon.



Mission Control Center at the Manned Spacecraft Center, during the fourth television transmission from the Apollo 13 spacecraft while enroute to the Moon. Eugene F. Kranz (foreground, back to camera), one of four Apollo 13 Flight Directors, views the large screen at front of MOCR. Astronaut Fred W. Haise Jr., lunar module pilot, is seen on the screen. Shortly after the transmission ended an explosion occurred that ended any hope of a lunar landing and jeopardized the lives of the three crew members. (NASA photo)

Jim Lovell turned to his crew.

“Every flight has a crisis,” he said. “Something always goes wrong. Fortunately, this happened early in our flight, and we’re now free and clear of anything else going wrong.”

As the crew of Apollo 13 settled in for what they expected to be a relatively tranquil few days’ journey to the moon, Haise soaked the experience in.

“I think the thing about space flight that you can’t compare to anything else is the zero gravity you experience,” he said.

“I mean, you’re floating around once you get into Earth orbit and then for [the] three days it takes to get to the moon and back, and that whole time you’re able to move around pretty easily — especially in a small vehicle like we were in, where you reach out in almost any direction and touch something to stabilize yourself.

“It was probably much more difficult to keep one’s orientation on Skylab or on the International Space Station,” he said.

“The other thing you notice when you’re up there is that space flight tends to dry you out a bit,” Haise added. “It’s because of the pure oxygen that you’re breathing, but you definitely feel a dryness in your eyes and nose and so forth.”

About the only thing Lovell, Swigert and Haise had on their schedule that could be considered a diversion, was a live, 30-minute television special they were to broadcast back to Earth on the third day of the flight.

Ostensibly a tour of the lunar module Aquarius, the show quickly became a showcase for Haise’s sense of humor.

At one point, near the end of the broadcast, Haise flipped the lunar module’s cabin-repressurization valve, which made a fairly loud bang as it activated.



The three Apollo 13 astronauts huddled in their lunar module “life raft.” (NASA photo)

The sound startled Lovell, who said every time Haise pulled the prank, “Our hearts jump in our mouths.

“Then we look and say, ‘Oh, it’s Haise again, no harm done.’”

The broadcast was over, the crew was taking care of last minute chores before going to sleep for the night.

Haise was still in the tunnel between the command and lunar modules putting away items he’d used to illustrate weightlessness and other aspects of an astronaut’s life in space.

Meanwhile, mission control asked Swigert to perform the routine task of churning the oxygen tanks in the service module. Normally done once daily, a stir would destratify the contents of the tanks, making the pressure readings more accurate.

Swigert flipped a switch and, a few seconds later, flipped it off again. Less than a minute later, all three astronauts heard a huge bang, accompanied by fluctuations in the command module's electrical power.

Through the static, mission control heard Swigert say, "Houston, we've had a problem." A moment later, on a clearer channel, Lovell repeated the phrase that came to define what had just become a life or death mission.

But even as they uttered those words, the crew had no idea how bad a situation they were in.

"Not initially," Haise recalled.

Lovell's initial thought on hearing the noise was that Haise had once again activated the lunar module's cabin-repressurization valve, but he could see that Haise had no idea what had happened.

Swigert initially thought that a meteoroid might have struck the lunar module, but he and Lovell quickly realized there was no leak.

"I was still down in the lunar module, putting items away when the explosion occurred and it wasn't until I got back up and looked at the instrument panel that I got a sick feeling in my stomach," Haise said. "It was clear from the instruments that we had lost one of the two oxygen tanks in the service module — the leak in the other had not yet registered — and I knew the loss of one oxygen tank constituted an abort.

"So right at that moment I knew we would not even go into lunar orbit and certainly would not land on the moon," he said. "I guess the best way to describe my feeling then was extreme disappointment. We had gone to all this effort, done all this training, through two previous missions and now this one was my big day and it was lost in an instant."



The moon as seen from the window of the Apollo 13 lunar module
Aquarius. (NASA photo)

Back on Earth, mission control had larger concerns. While at the moment the crew was fine, there was no way to completely assess the damage to the spacecraft. If the cabin ruptured in any way, the crew would die in seconds. If the power failed, they'd freeze to death in hours.

The gravity of the situation deepened significantly when Lovell looked out the window of the command module and reported seeing “a gas of some sort” venting into space.

On the ground, challenges mounted as the mission's only goal became getting the astronauts back to Earth alive.

The first concern was power. On a craft sailing through a vacuum everything on board needed electrical power, and based on what

little was known about the damage to Apollo 13, it was a certainty that some fuel cells would be drained in hours, while others would simply shut down.

The other question revolved around which route was the best to take home. Turning the vessel around before reaching the moon might have seemed the shortest route, but the damage sustained by the main engine was unclear and the potential draw on energy from the batteries was worrisome.

Instead, mission control opted for a “free return” approach that had Apollo 13 do a half-circle around the moon and allow the interaction of its and the Earth’s gravity to basically slingshot the crew back toward Earth.

This option required one final burn of the engine to place Apollo 13 on the right trajectory. Then the crew was ordered into the lunar module, which still had fully charged batteries and full oxygen tanks for use on the lunar surface.



Fred Haise sleeping in the lunar module Aquarius during the long
voyage home. (NASA photo)

With that, all power on the command module was shut down, and the lunar module became the crew's lifeboat for the rest of the journey home.

"Once we had the explosion, the flight plan, everything we'd laid out to accomplish, all of that was gone," Haise said. "We had one and only one flight test requirement to perform and that was to take a set of photographs on our way toward the moon. That we did.

"But after the explosion, we were on a new agenda with the primary objective being, 'Just get home,'" he said.

Of the moon itself, Haise said his first impression when he finally got a close-up view was how "completely, completely different it looked compared to the photographs we'd seen from earlier missions."

"Of course, it contrasted completely with the Earth, we expected that, but when it came to how we'd seen the moon in the past, it was quite different as well," he said. "For one thing, we got a broader view than other flights to the moon. We were a little over 130 miles above the surface, where other flights orbited the surface at about 60 miles.

"The surface of the moon itself is almost colorless. ... It runs in different shades of gray from almost black to almost white, the lighter material being the result of more recent meteor or meteorite strikes," Haise said.

"The front side of the moon, the side we see, has many large, dark areas that we call Mares or 'Seas,'" he said. "There are fewer of those

on the backside. It's mostly highland looking ... really beat up ... by crater after crater. Because, due to its lack of atmosphere, it's still being bombarded, even today.”

But if coming around the moon at exactly the right trajectory was a challenge, that wasn't the end of the crew's problems. While the lunar module carried enough oxygen for the trip, the astronauts were expelling carbon dioxide with every breath — a hazard in such a confined space.

Under normal circumstances, this hazard was dealt with by having the CO₂ absorbed by canisters of lithium hydroxide pellets. The problem was the lunar module was a ride meant for two, not three, and in any event, the canister's capacity was limited to only about 45 hours, the amount of time two of the astronauts were expected to spend — in total — on their lunar adventure.

Making the situation even more a challenge for all involved — including mission control — is that the command module had plenty of the lifesaving canisters, but they'd been made to accommodate the design of that spacecraft and were the wrong size and shape to work in the lunar module.

Eventually, engineers on the ground came up with a solution. Using materials that could readily be found on board the spaceship, they directed Haise and Swigert to build an improvised device, later called “the mailbox,” to eliminate the gaps between the two canisters, and carbon dioxide levels dropped immediately.

Two problems they couldn't overcome through ingenuity were having enough drinking water — they would simply be forced to ration, keeping daily consumption per man down to 6.8 fluid ounces — and the cold.



The Earth as seen from Apollo 13 about two days before the crew's return. (NASA photo)

With the power shut off in the command module, the temperature aboard the lunar module plunged to 38 degrees Fahrenheit. Lovell initially considered having the crew put on their spacesuits, but decided that would ultimately warm them too much. Lovell and Haise opted to wear their lunar boots, but Swigert, who had been expected to stay in the command module the entire flight, wasn't as fortunate and simply put on an extra coverall.

The last series of challenges were the most poignant and serious. With the crew back firmly in the Earth's glow, mission control

determined the spacecraft had drifted slowly off course — or rather was coming in at too shallow an angle.

That meant instead of reentering the Earth's atmosphere and eventually floating safely down to the surface, the space capsule would skim the outer reaches of the atmosphere and effectively glance off of it back out into space, meaning certain death for the crew.

To right the ship, the crew was told to fire the lunar module's thrusters one last time, using the line between night and day on the Earth to guide them into the right trajectory.

It was at this point that the damaged service module was finally jettisoned, allowing the crew to see the cavity in which the explosion occurred and the various twisted components that made their return so perilous.

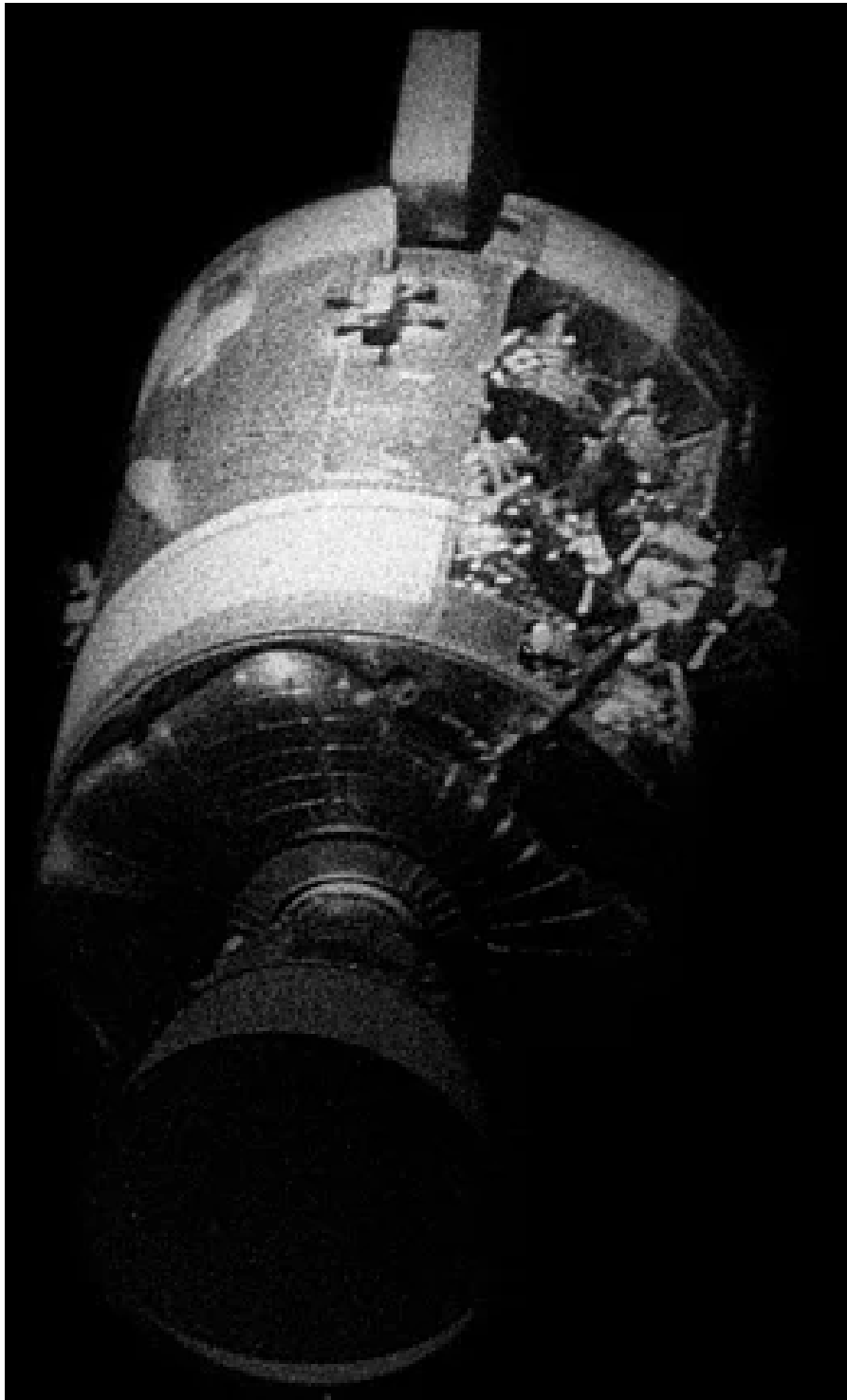
All that remained was to jettison the “life raft,” the lunar module, and send it to a fiery demise over the South Pacific. With that, Apollo 13 finally reentered the Earth's atmosphere and splashed down on April 17, 1970, and the crew was recovered by the USS Iwo Jima.

For Haise, it was impossible not to feel a mixture of emotions. On the one hand, he was home, alive and about to see his family again. On the other, he had missed his chance to actually walk on the moon.

NASA offered a consolation prize. Consider Apollo 13 a dream delayed, not deferred, he was told.

Haise was quickly assigned to serve as backup commander to Apollo 16 and while he knew he likely wouldn't make that flight, it meant he would be in line to be commander of Apollo 19.

"I was



The crew didn't get to see the extent of the damage to their ship's service module until it was jettisoned shortly before they re-entered the Earth's atmosphere. (NASA photo)

backing up John Young and that put me in the line up. I had

[astronauts] Jerry Carr and Bill Pogue assigned to me as the Apollo 16 backup crew and that meant Jerry Carr and I would have landed on the moon on Apollo 19.

“We started down the training path for that, and then we learned they were canceling Apollos 18 and 19 due to funding concerns,” he said.

“I was now the commander of a dead-end backup crew. Jerry and Bill were reassigned to a Skylab mission, and I inherited Stu Roosa and Ed Mitchell, who had just come off flying Apollo 14 by that point, to finish up the last backup crew assignment.

“So I lost my second chance to get back to the moon,” he said.

What’s interesting about Haise’s approach to writing “Never Panic Early” is that he never frontloads an episode of his life and then gives short shrift to the rest. It’s not an “Apollo 13 and then there was the rest of my life” kind of tome. Instead, it’s a steady unfolding of chances taken and some taken away.

“I know there are aspects of my life that are certainly different compared with other people, but my goal was simply to tell part of the story of my life and the unique progressions that occurred during it,” he said.

And while being trapped in a spacecraft with some doubt that you’d ever make it home might make the top of most people’s list for “most dramatic moment of my life,” Haise doesn’t see it that way.

“I actually consider the first time I released and flew the space shuttle Enterprise, during its initial approach and landing tests, to be the greatest moment of my career,” he said.

“I don’t know if you remember, but when we conducted those tests, we actually ‘launched’ the shuttle off the top of a Boeing 747,” he

said.

Haise and his co-pilot, astronaut Gordon Fullerton, took the maiden flight of the world's first space shuttle on Feb. 18, 1977. The main point of the mission was to test structural loads as well as flight and ground handling and braking characteristics.

Today the Enterprise, which never flew in space, is on display at the Intrepid Sea, Air & Space Museum in New York City.

As for the retrofitted Boeing 747, it was dismantled the following year and reassembled at the Johnson Space Center in Houston, Texas, not far from Haise's home.

"There are two reasons I consider those test flights the pinnacle of my career," he said. "The first was the inherent danger. Gordon and I, of course, were sitting in ejection seats, so we had a good plan B should anything go wrong for us after we were flying on our own.

"But what was particularly worrisome was what if something happened during separation from the 747? Flight control didn't quite work out a plan for what would happen if we impacted the 747 in some way during the initial separation.

"And I mean, we have found people on board that 747 without any good means of escape should a catastrophic emergency occur. So that was my biggest concern — their safety.

"The other worry that I had was programmatic. And in some ways, that was a bigger concern, because the space shuttle had been on a schedule for development and then, right before our flights were supposed to start, they announced a two-year slip — actually flights were being pushed back — because they discovered some problems with the tiles on the outside of the spacecraft.



Fred Haise and Gordon Fullerton (wearing oxygen mask) in Enterprise's cockpit, 1977. (NASA photo)

“So here we had a craft that was just sitting there, and in the interim, we changed presidents,” Haise said. “Now, that’s always a concern for any major program that extends over years. It’s just a reality that you deal with.

“One president comes in and starts a program, and then a new administration comes in a few years later, and you know, it’s not their program. So you have to worry about having the same apparatus and support in place.

“And then, in addition to this, obviously, there are always a lot of changes going on in regard to Congress, and that again raises the question, ‘Will the next Congress sustain my program?’ ‘Will they be willing to fund it?’

“So I remember the pressure. I remember feeling badly that we had no backup craft at that point, no second Enterprise, should something go wrong ... and if it did, then there would be a huge gap in the program again ... at a critical time. ... And we may have ended the shuttle program right there,” he said.

With that, Haise was talking about Apollo 13 and the inherent risks that go with space flight and the things that prey on men’s minds.

Asked if he was just too trained and too busy to worry about his own mortality during the aborted moon mission, Haise considered his answer.

“No, no ... we were not that busy. There were time intervals between the things we had to execute along the way to get back home, and I was obviously well aware that the situation was serious and that we may not get back,” he said, adding, “That was something you thought about.

“But at the same time, I had confidence in the team, the brain trust we had, and how that team worked, because our flight was not unique with problems,” he said. “Every flight had at least a few.”

Haise recalled how months after the mission, NASA published a mission report.

“It was a pretty thick document that had a series of appendices and one of them was a lengthy list of what they called ‘anomalies,’ which is really just another way of saying, ‘things that break in flight,’” he said.

“Now, if you looked at this appendix and discounted the two early Apollo flights that had only one vehicle — the command module absent the lunar module — what you found was that Apollo 13 actually had the second-fewest number of problems compared to the other moon missions.



Enterprise on the back of the specially modified Boeing 747 from which it would take its first test flights. (NASA photo)

“Apollos 14 and 16 each came close to not landing because they had problems as they were getting ready to land on the moon’s surface and they were told to circle a few more times to give mission control a chance to figure them out and go forward,” Haise said.

“So I knew, when we were in trouble, that this was the kind of thing that was going on on the ground, and that it involved a lot of people, not just those directly in mission control,” he continued. “That’s one of the things that got lost in the Apollo 13 movies — just how many people were working on the situation on the ground.

“For each mission, for instance, there were actually 14 mission control teams with flight directors; then, behind them, you had a mission evaluation room, and then there was a building, right next to mission control, where you could communicate directly with all the contractors who had worked on the spacecraft before NASA accepted them. And then there were subcontractors below them.

“So no matter what happened, you knew you had this knowledge base working behind you, working to figure things out. So I had confidence they’d get us home. In fact, they [in mission control]

